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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,148	10/22/2001	Joseph David Rigney	13DV13878	4144

31450 7590 10/06/2003

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EXAMINER

ROSENBAUM, IRENE CUDA

ART UNIT	PAPER NUMBER
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3726

DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

N.K.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/086,148	RIGNEY ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Irene Rosenbaum	3726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Allowable Subject Matter***

The indication of allowable subject matter is hereby withdrawn in view of the rejections set forth below. The examiner regrets any inconvenience this may cause applicant.

### ***Response to Arguments***

See the paragraphs below for the response to arguments submitted by applicant in the earlier request for reconsideration.

### ***Claim Rejections - 35 USC § 102***

Claims 1,2,4,8,9,21-23,27 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakaraj et al '078. This patent teaches all of the claim limitations of claim 1 except it does not explicitly teach that the groove spacing, geometry and wall angle with the surface is 'predetermined' as set out in claim 1. However, when Nakaraj et al '078 is carefully considered as a whole, it is inherent that the groove spacing, geometry and wall angle is indeed 'predetermined'. For example, the patent teaches at column 5, lines 1-3 that a mechanical indenter or cutting tool can be dragged over the surface 'to form an array of grooves'. Clearly the artisan, by the choice of the cutting tool and how he decides to operate it, inherently 'predetermines' the groove spacing, geometry and wall angle e.g. are the groove walls in the shape of a V so the walls are at an angle or do the grooves have straight walls at 90 degree angle to the surface, in the 'array of grooves'. Likewise column 5, lines 14-16 teaches that one may use a laser to form a 'groove pattern'. It is inherent that the artisan would have predetermined (that is, decided in advance) the groove pattern before s/he operates the laser to make the

Art Unit: 3726

'groove pattern'. With respect to claim 8, note column 5, lines 45-50. With respect to claim 9, note column 4, lines 46-50. With respect to claim 27, note this is a product by process claim. Thus, it is appropriate to reject such a claim under 35 USC 102/103 over a product/structure that appears to be equivalent, as in the patent, and the burden is properly shifted to applicant to prove that the resulting product is materially different (see MPEP 2113).

***Claim Rejections - 35 USC § 103***

Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakaraj et al '078 in view of Skelly et al '971. Nakaraj et al '078 teaches localized repair of the turbine blade where the thermal barrier ceramic coating has been damaged, by using a mechanical tool or laser to cut an array of grooves or a groove pattern into the bond layer to improve adhesion of the ceramic coating that will be applied to repair the localized damage. Skelly et al teaches that upon initial application of the ceramic thermal barrier coating to a bond layer on a component such as a turbine blade (column 4, line 56), it is important to use a predetermined groove pattern to obtain 'crack impeding geometries (see abstract and column 3, lines 20-34, column 4, lines 11-13). The preferred method is to use a laser (see column 3, lines 64+). Thus, it would have been prima facie obvious when doing the localized repair of Nakaraj et al '078 to have used a predetermined groove spacing, geometry, wall angle, as such is taught in Skelly et al to be important in providing a turbine blade ceramic thermal barrier coating layer onto a grooved bond layer so that the ceramic layer will not crack in operation. One would be motivated by the reasonable expectation of having a superior repair with use

Art Unit: 3726


of a groove pattern as taught by Skelly et al to be advantageous for applying the ceramic layer onto the bond coat layer to prevent/delay crack propagation through the ceramic layer. Note Skelly et al teaches a groove spacing of 5 mils at column 9, lines 20-22, with a wall angle between 15 and 90 degrees (see figures 2,4,5 – appears to be straight wall grooves in figures 2,4 V shaped grooves in figure 5), the grooves are not thicker than the bond coat 34 of figure 2 etc. – compare to groove spacing etc set out in present claims 10-14, 24. Note it appears inherent, that one must operate the laser beam at an angle of 0 to 75 degrees as recited in claims 14 and 24, in order to obtain the wall angle of 15 to 90 degrees which is suggested in Skelly et al, or alternately, it would have been prima facie obvious optimization of a known result effective operating parameter to choose an appropriate incidence angle for the laser beam machining of the grooves. Likewise, with respect to claims 6 and 7, it appears that optimizing the known result effective parameters of power level, speed of laser cutting, etc., especially since these are being used in the same context of making grooves with a laser as taught in each reference, would have been prima facie obvious, especially in the absence of criticality or unexpected results from the use of these parameters. With respect to claim 5, Skelly et al teaches the use of an excimer laser (column 3, line 67).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irene Rosenbaum whose telephone number is 703-308-1792. The examiner can normally be reached on Monday-Friday.

Art Unit: 3726.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Greg Vidovich can be reached on 703-308-1513. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1148.

  
Irene Rosenbaum  
Primary Examiner  
Art Unit 3726

IR